

C  
540  
PA7

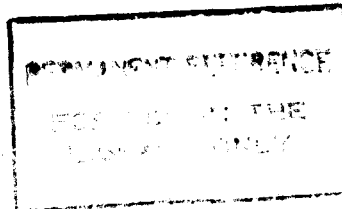
STUDY OF PRINT INTENSITY VARIATION OF CIGARETTES

A PROJECT REPORT PRESENTED BY  
CHANDANA MAHESH SADAGIRI PATHIRAJA

to the  
POSTGRADUATE INSTITUTE OF SCIENCE

*In partial fulfilment of the requirement for the award  
of the degree of*

MASTER OF SCIENCE  
of the



UNIVERSITY OF PERADENIYA  
SRILANKA

2003

573466

## ABSTRACT

In today's business world quality is no more a competitive edge because it has become a necessity. We have to meet / exceed our customer's needs each time every time. In our quest to meet customer's needs, we came across a problem of cigarette die print intensity variation. That is the die print is either light or dark.

This variation of die print is very crucial for us because, it differentiates our product with the counterfeit product. Also this die print variation makes the consumer think that it is a counterfeit product this may lead to his/her quitting our product.

This die print variation in the cigarette is mainly caused by the viscosity variation of the ink which occurs with the change in instrument temperature. When the cigarette maker Operates, the initial temperature of the die and ink is equivalent to the room temperature But over a period of time, since the die is run at very high speed, the temperature of die Increases due to friction with the inking roller and it also absorbs the heat from the surrounding mechanical parts like running shafts and other parts and from the heaters which are used for cigarette seam closing. This increase in the temperature of the die also increases the temperature of the ink and thus causes the viscosity to vary.

In order to study this problem we need to device a method of actually measuring the die print intensity. We have found that CCD detector can be used to give us a measure of die print intensity. Converting this measure to a number enabled us to compare our experimental results.

CCD detector works on the Photo sensitive sensor based technology of the charge Coupled Device (CCD) it consist of an array of semiconductor photocells in which electric charges are generated by incident light

Underlying CCD elements absorb these charges and pass them on line by line to the edge of sensor, where they are read out and colour images are obtained by using CCD sensors.

CCD reading would be inversely proportional to the intensity of the print.

We were able to recommend to our supplier the optimum viscosity range of ink to be supplied. in order to obtain satisfactory print intensities at the working temperatures of our cigarette making machine LOGA 3D